

REMARKS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe the subject matter which applicant regards as the invention.

Claims 1, 3, and 5-12 remain in the application. Claims 2 and 4 have been cancelled previously. Claim 1 has been amended herein, but no new matter has been added and no additional searching should be required.

Claims 1, 3 and 5-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. 5,879,519 to Seeser et al. (hereinafter Seeser) in view of U.S. 3,884,787 to Kuehnle (hereinafter Kuehnle). For the following reasons, the Examiner's rejection is traversed.

Seeser is directed to a multi-step sputter and reaction process and apparatus. Metal or silicon atoms are first sputtered from a solid target onto a substrate. Then the deposited layer is bombarded with reactive oxygen to oxidize the deposited layer (see Col 7, lines 10-40). Seeser uses a planar DC magnetron sputter device, for example, for applying material. At a first station a magnetron deposits, for example silicon, then at the next station tantalum, for example, is deposited. Then oxidation occurs in a later step. Figs. 5 and 37A, for example, show an electrode powered by a single power supply.

Kuehnle is directed to a reactive sputtering process used for coating thin flexible substrates arranged in strips or elongate members in an atmosphere of inert gas.

The Seeser reference is not applicable for teaching the structure of a device performing a "plasma enhanced chemical vapor deposition" process (PECVD) because Seeser performs a different, multi-step sputtering process. The difference in the processes is that the PECVD process is a one step application process (chemical reaction takes place in the plasma and the reaction product is deposited on the substrate), while a Seeser teaches a two step process: application of material(s) to the substrate, then an oxidation reaction (as described above and at column 15 line 66 – col 16, line 3 of Seeser). Although Kuehnle is directed to a one step sputtering process, as opposed to a multi-stop sputtering process, Kuehnle does not teach how the apparatus of Seeser could be used in a PECVD process. Seeser specifically states that single pass techniques are not relevant to its invention (Col. 1, Lines 56-61).

Even if the references were combined in the manner proposed by the Examiner, the present invention would not result. Further modification would be required. Namely, neither reference alone or in combination teaches or suggests two similar magnetron electrodes arranged side by side. Rather, in Seeser, for example, electrodes 26 and 27 are *different* as they are sputtering different materials onto the workpiece. Kuehnle does not teach use of multiple electrodes and thus does not cure the deficiencies in Seeser.

Claim 1 also requires that each magnetron electrode is supplied with an alternating voltage by its own power supply unit. As stated above, with regard to Seeser, this is not disclosed. Seeser discloses a single power supply powering a single electrode, but only in an embodiment (Figs 6, 7, 37A) where a single electrode is used. Multiple electrodes, each with their own dedicated power supply

are not shown in this embodiment of Seeser. In Figs. 8, 10 and 16 Seeser shows multiple stations, but does not show a series of "substantially identical" electrodes, as required by the claim. As Seeser does not disclose a series of substantially identical electrodes, it follows that Seeser cannot disclose a manner of supplying such a series of identical electrodes with power. The obvious way to do so would be with one energy source, but the claimed device is different. Kuehnle does nothing to cure the deficiencies of Seeser in this regard because Kuehnle also only shows a single energy source.

Additionally, neither of the references discloses magnetron electrodes with the structure claimed, namely a center magnetic pole and a peripheral magnetic pole where the two poles have opposite polarities and the peripheral pole extends around the center pole. Rather both Seeser and Kuehnle do not disclose electrodes having this claimed structure.

For at least the reasons above, reconsideration and withdrawal of the rejection of claim 1 under §103(a) is respectfully requested.

Claims 3 and 5-12 depend directly or indirectly from claim 1 and are believed to be allowable at least for the reasons above. Reconsideration and withdrawal of the rejection of claims 3 and 5-12 over Seeser in view of Kuehnle under §103(a) is respectfully requested.

Claims 12 further stands rejected under 35 U.S.C. §103(a) as being unpatentable over Seeser in view of Kuehnle and further in view of U.S. 6,306,265 to Fu et al. (hereinafter Fu). For the following reasons, the Examiner's rejection is traversed.

Fu is directed to a magnetron especially advantageous for low-pressure

plasma sputtering or sustained self-sputtering having reduced area, but full target coverage. The magnetron includes an outer pole face surrounding an inner pole face with a gap therebetween.

Claim 12 depends from claim 1, and Fu does not cure all of the deficiencies of Seeser and Kuehnle with regard to the features of claim 1. Specifically, Fu, like Kuehnle does not teach how a device performing two step sputtering in Seeser can be modified to be used in a PECVD process.

Additionally, Fu does not teach multiple magnetron electrodes, each powered by its own power supply and does not teach more than two similar magnetron electrodes being arranged side by side.

For at least these reasons, the rejection of claim 12 as being unpatentable over the combination of Seeser and Kuehnle and Fu is respectfully requested.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0160, our Order No. FRR-16006.

Respectfully submitted,
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